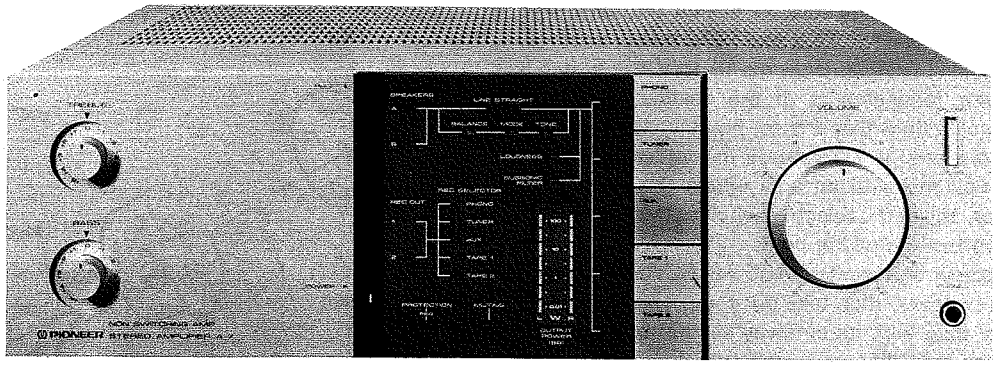
Operating Instructions

NON SWITCHING AMP
STEREO AMPLIFIER
A-7

HE, HB
S, S/G



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IMPORTANT

To prevent electric shock, do not remove cover. No user serviceable parts inside, refer servicing to qualified service personnel.
Always disconnect all the equipment from the mains supply when disconnecting the signal leads. The power cord should be connected last, make sure that the power switch is off.
Unplug the set from the wall socket when it is not to be used for an extended period of time.

FOR USE IN UNITED KINGDOM AND AUSTRALIA

CAUTION 240 V: Mains supply voltage is factory adjusted at 240 V.

FOR USE IN UNITED KINGDOM

The wires in this mains lead are coloured in accordance with the following cord:

Blue:	*Neutral*
Brown:	*Live*

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug proceed as follows.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

PIONEER®

LINE VOLTAGE VARIATIONS

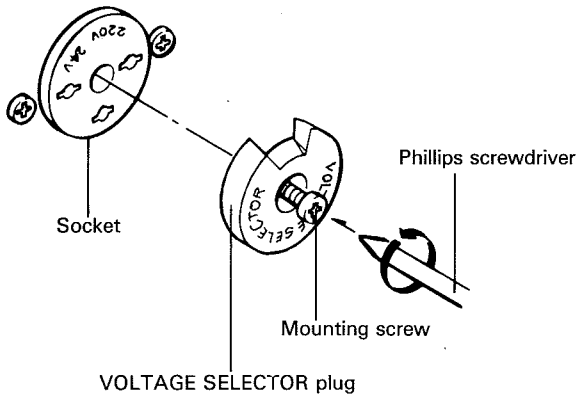
The specifications of this model differ according to the shipment destination.

- For U.K. ('HB' stamped on packing case): Power line voltage is 240 volts.
- For mainland Europe ('HE' stamped on packing case): Power line voltage is 220 volts.
- For general export model ('S', 'S/G' stamped on packing case): A 4-point (110 V/120 V/220 V/240 V) voltage selector switch is provided on the rear panel, and AC outlets are provided on the rear panel.

FOR USE IN U.K. (HB) AND MAINLAND EUROPE (HE)

You will find the line voltage selector switch on rear panel. This switch has positions for 220V and 240V power sources. Before your model is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the AC outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows. Before adjusting, disconnect the power cord.

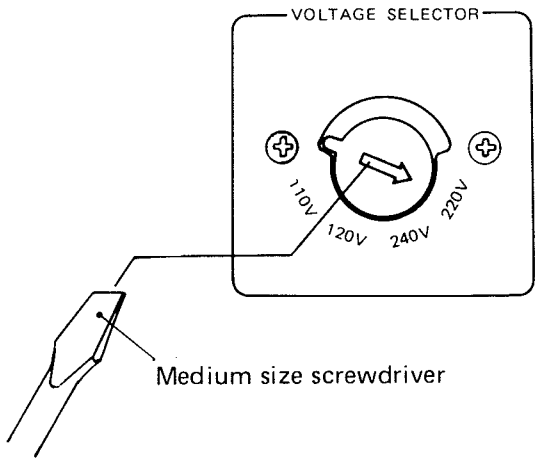
1. Loosen the screw on the VOLTAGE SELECTOR plug with a Phillips screwdriver, then take out the plug.
2. Re-install the plug with its cutaway section exposing the correct voltage indication as illustrated below.
3. Tighten the mounting screw.



FOR GENERAL EXPORT MODEL (S, S/G)

You will find the line voltage selector switch on rear panel. This switch has positions for 110V, 120V, 220V and 240V power sources.
Before your model is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the AC outlet. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows. Before adjusting, disconnect the power cord.

1. Prepare a medium size screwdriver.
2. Insert the screwdriver into the arrow on the voltage selector and adjust so that the tip of the arrow points to the voltage value of your area.



FEATURES

NON SWITCHING AMP for Power Amplifier

The power amplifier section adopts a Non-Switching Amplifier system which combines the merits of the class A amplifier's high quality and the class B amplifier's high efficiency for a

Continuous power output of 70 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.007% total harmonic distortion.

The voltage amplification stage features two current detector circuits to control the bias circuit voltage and prevent the current flowing to the power transistors from being cut off. As a result of these innovations, the distortion generated when the transistors are switched is suppressed, the dynamic distortion is improved and the sound takes on an extra dimension in clarity extended to the high-frequency range.

Power amplifier with DC servo circuit

The power amplifier features a DC servo circuit employing an operational amplifier. By adopting a DC servo circuit and incorporating an FET differential input circuit in the first stage, it has become possible to cut out the coupling capacitors, which cause coloration in the sound quality, and provide a direct-coupled circuitry configuration from the AUX, TUNER and TAPE terminals through the outputs. As a result, virtually distortion-free sound reproduction is ensured across a wide frequency spectrum from the ultra-low range to the ultra-high range.

Line Straight Switch Provided

This unit comes with a unique line straight switch which can be flipped to allow the signals to bypass the tone control circuit, balance volume and mode switch. It is thus easy to provide a simple circuit configuration—something which is extremely important as far as the purity of the sound heard is concerned.

MM/MC Equalizer With High S/N Ratio

The equalizer amplifier is provided with a first stage differential input and ICL configuration, and it employs rigorously screened resistor and capacitor elements to realize a phono signal-to-noise ratio of 88 dB with an MM cartridge and of 70 dB (IHF-A) with an MC cartridge as well as an RIAA deviation of ± 0.3 dB over 20 to 20,000 hertz. The maximum allowable input, at 200 mV for an MM cartridge and of 20 mV for an MC cartridge (1 kHz, 0.0015% THD), is more than enough for the best sound quality, enabling virtually distortion-free record play even with music characterized by high peaks.

Recording Selector Switch/Indicator Featured

This switch allows you to record another program source onto a tape in your tape deck even while you are listening to the source which you have selected with the FUNCTION switch. The indicator tells you exactly what is being recorded and what is being played at a glance.

Pictographic Input/Output Display

By using pictographs for the function position and speaker output display, operational ease is enhanced and the operational mode of the tone controls in the signal path is indicated.

Protection Indicator

As soon as the protection circuit is actuated to protect the amplifier from damage when the speaker terminals have been shortcircuited in error or as soon as the muting circuit, which functions to prevent the unpleasant noise heard when the power is switched on and off, is made operational, the speaker output is cut off and indication is made by this red protection indicator lamp. The lamp changes over to green once the amplifier is operating normally again.

LED Power Meter

The output level meter employs a 7-point LED with a fast response to give an accurate indication of the output peaks. In addition, the furthermost LED lights up red as an easily distinguishable warning that the output signals are being clipped.

Attractively Styled Group Display Panel Design

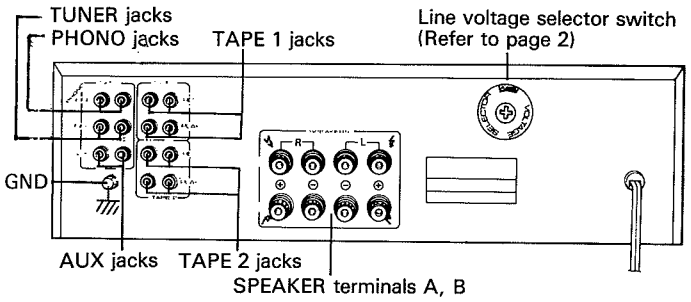
All the function switches and volume control which are used regularly are positioned on the right while all the sub-controls which are usually set up and then left without further adjustment are housed behind a movable panel at the left. All the indicators that show the signal flow, output level and other modes of operation at a glance are housed on a panel in the center of the unit.

* *Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.*

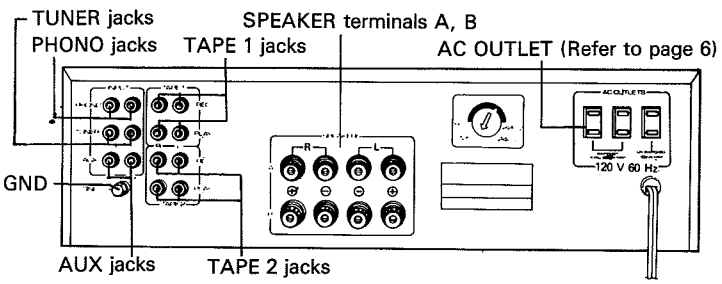
REAR PANEL DESCRIPTION

REAR PANEL FACILITIES

For mainland Europe model (HE) and U.K. model (HB)

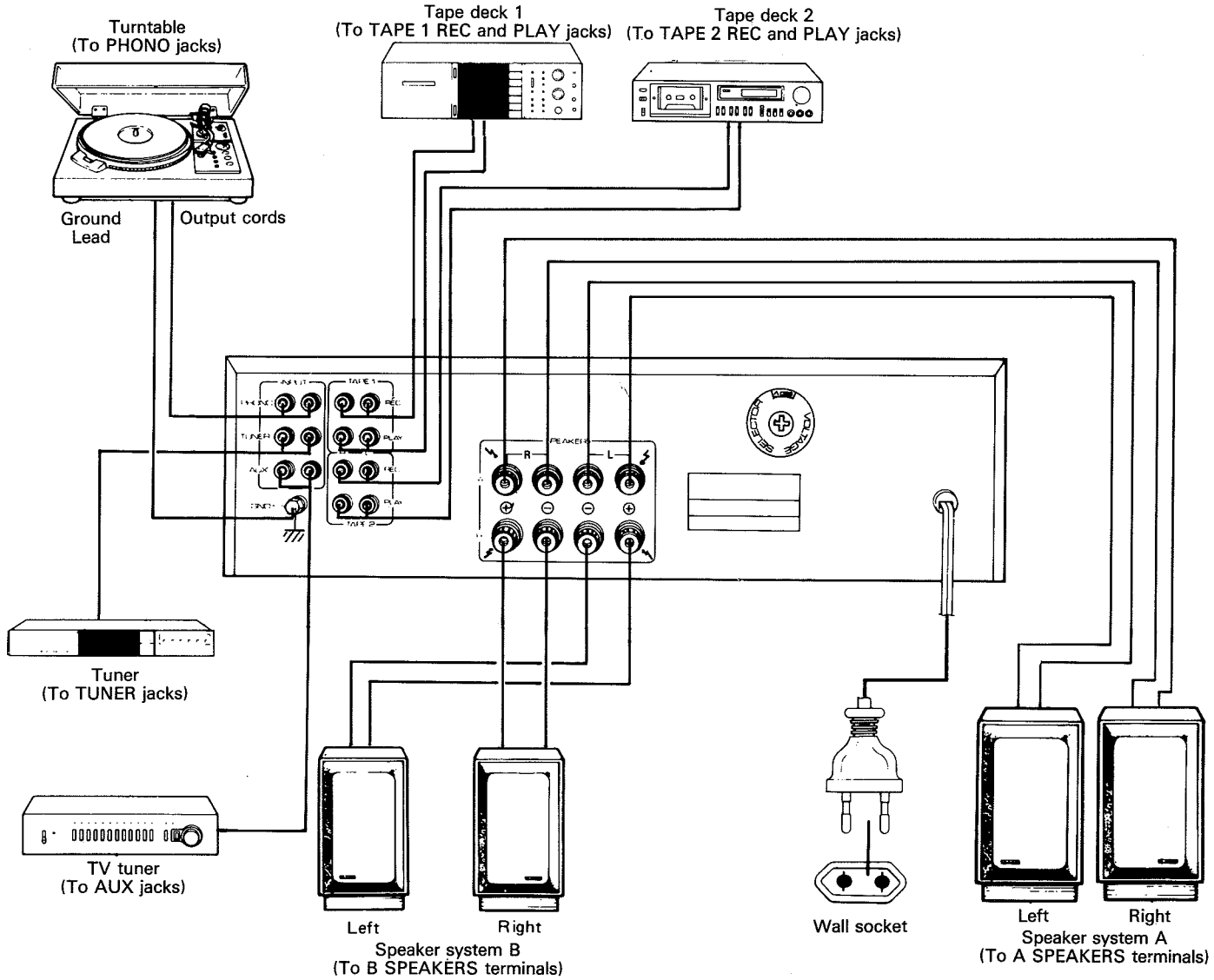


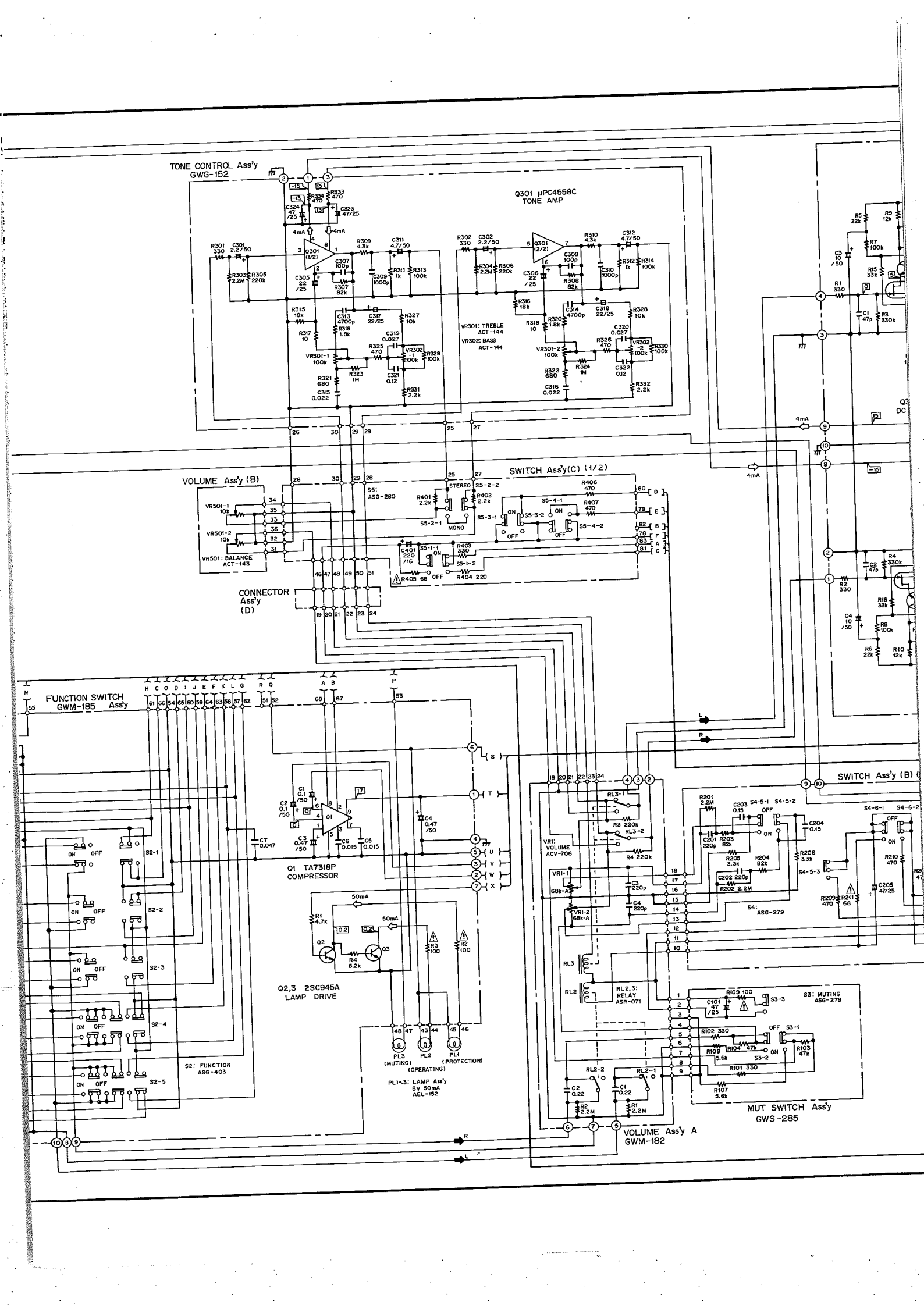
For general export model (S, S/G)



- *The AC outlets of U.K. model have been removed in order to comply with safety regulation.*

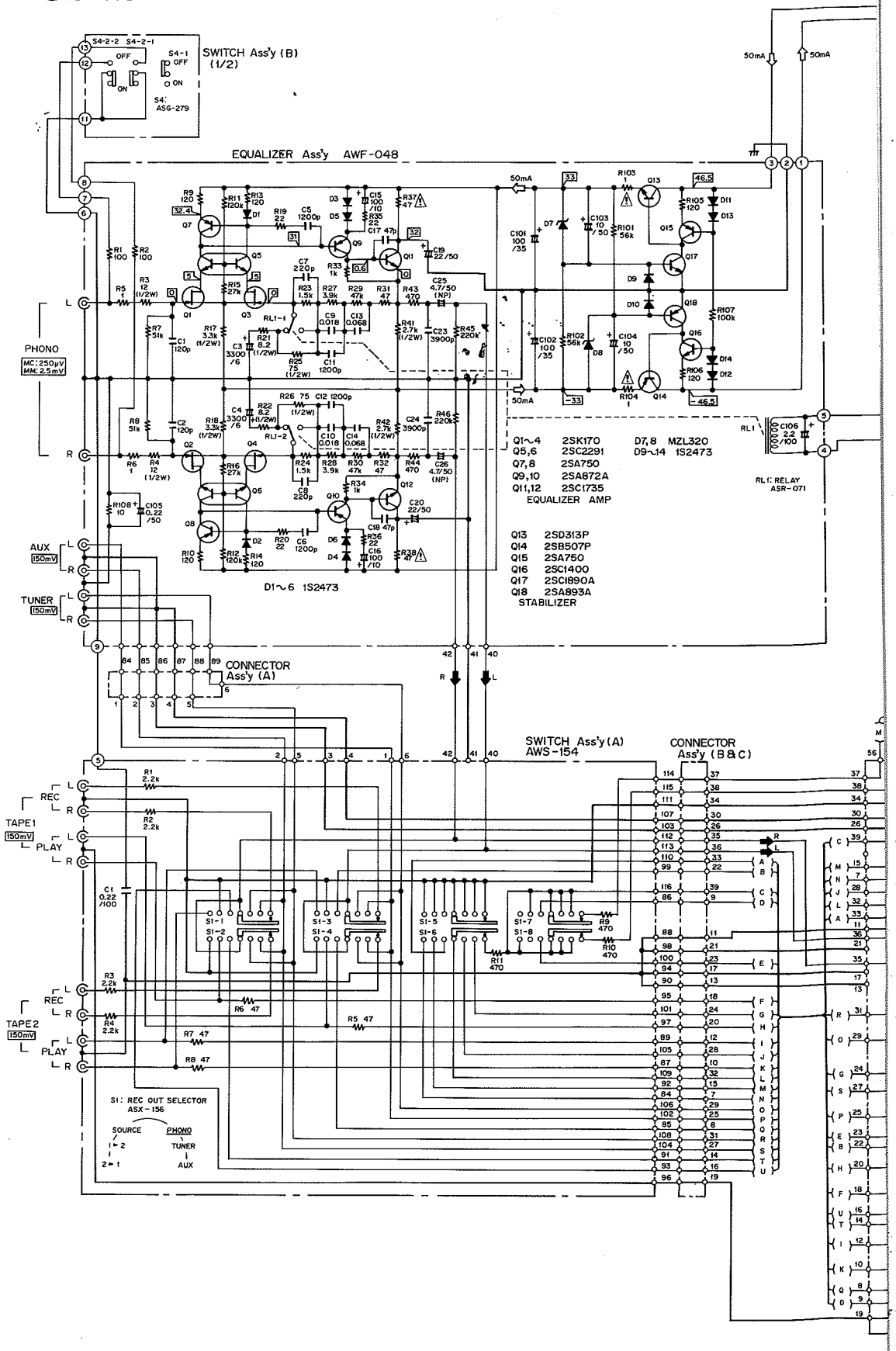
CONNECTION DIAGRAM




TONE CONTROL Ass'y
GWG-152
Q301 μPC4558C
TONE AMP
VR301: TREBLE
ACT-144
VR302: BASS
ACT-144
VOLUME Ass'y (B)
VR501: BALANCE
ACT-143
S5:
ASG-280
SWITCH Ass'y(C) (1/2)
STEREO
MONO
CONNECTOR
Ass'y
(D)
FUNCTION SWITCH
GWM-185 Ass'y
S2: FUNCTION
ASG-403
Q1 TA7318P
COMPRESSOR
Q2,3 2SC945A
LAMP DRIVE
PL1-3: LAMP Ass'y
8V 50mA
AEL-152
(MUTING)
(OPERATING)
(PROTECTION)
VR1:
VOLUME
ACV-706
RL2,3:
RELAY
ASR-071
S4:
ASG-279
S3: MUTING
ASG-278
MUT SWITCH Ass'y
GWS-285
VOLUME Ass'y A
GWM-182
SWITCH Ass'y (B)

A-7 HE,HB

SCHEMATIC DIAGRAM



CONNECTING THE COMPONENTS

CAUTIONS WHEN CONNECTING

- Do not switch on the power to the stereo amplifier and other stereo components until all the connections of the stereo system have been completed.
- Use the accessory connecting cords which come with each of the components (tape deck, tuner, etc.) for the connections.
- The "L" and "R" on the stereo amplifier's input and output jacks stand for left channel and right channel, respectively.
- Connect the pin plugs of the connecting cords securely. Otherwise the sound may not be heard or noise will be generated.

CONNECTING THE SPEAKER SYSTEMS

There are two sets of speaker output terminals. Use the top set of terminals (A) when connecting only one set of speakers. When facing the system (in the listening position), connect the speaker system on the left to the left channel terminals and the speaker system on the right to the right channel terminals.

Cautions when connecting the speakers

1. The speaker output terminals have polarities: minus (black) and plus (red). The input jacks on the speakers also have plus and minus polarities. When connecting, make sure that these polarities are aligned: plus to plus and minus to minus. If the left and right speaker polarities are misaligned, the reproduced sound will not display a natural stereo effect.
2. Use speakers with a **nominal impedance ranging from 6 ohms to 16 ohms.** But when listening to a program with **two sets of speakers connected, make sure that the nominal impedance is between 12 ohms and 32 ohms.**

Stripping and connecting the speaker cords (Fig. 2)

1. Strip about 10 mm of the covering from the speaker cords.
2. If the strands at the tip of the cord are pointing in all directions, twist them with your thumb and forefinger. **Otherwise some of the strands may come into contact with other terminals and cords and cause a short.**
3. Rotate the terminal cap counterclockwise through about 4 or 5 turns.
4. Insert the speaker cord into the terminal's slit.
5. Now rotate the terminal cap clockwise and tighten up.
6. Make sure that none of the lead wires in the cords protrude.

USING THE AC OUTLETS

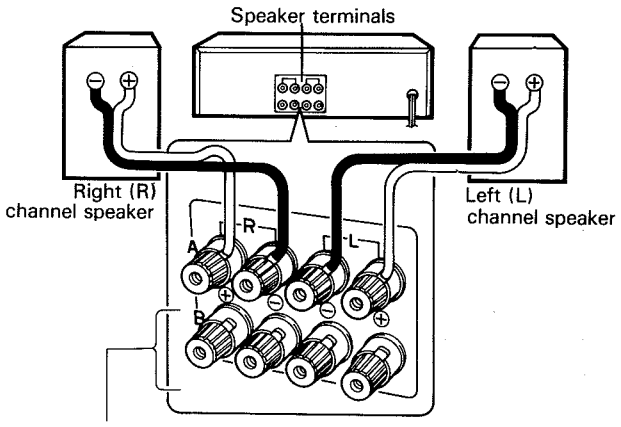
The power cords of the stereo components can be connected to the AC outlets on the amplifier's rear panel.

SWITCHED (TOTAL 200 W MAX)

The power supplied through these outlets is coupled to the operation of the amlifier's power switch. The maximum power capacity of the components which may be connected to these outlets is 200 W.

UNSWITCHED (100 W MAX)

The power is always supplied through this outlet regardless of the position of the amplifier's power switch. The maximum power capacity of the component which may be connected to this outlet is 100 W.



All these terminals are used when connecting second pairs of speaker systems.

Fig. 1

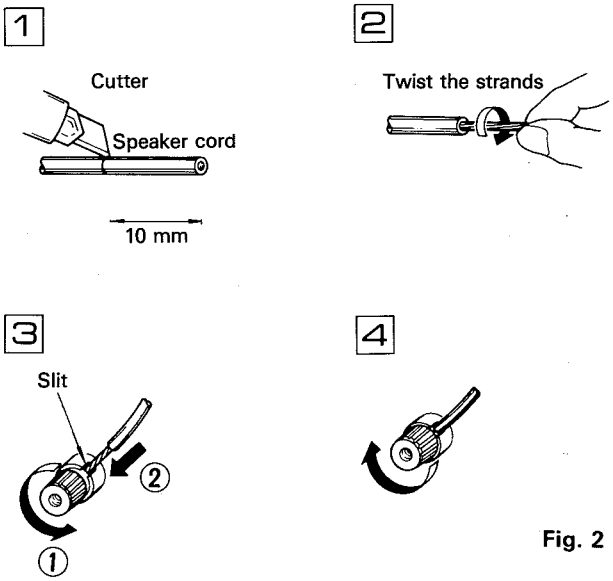


Fig. 2

CONNECTING THE TURNTABLE (Fig. 3)

- A head amplifier for the MC (moving coil) cartridge is built into this stereo amplifier. It is possible to connect two different types of cartridges, MM (moving magnet) and MC (moving coil) and select them with the selector switch on the front panel.
- Connect the ground lead of the turntable to the GND terminal on the amplifier.

NOTE:
Depending on the method used by your turntable's cartridge to generate electrical signals, the output terminals on the turntable may be connected to terminals other than the PHONO jacks. Read through the instructions accompanying the cartridge and connect properly.

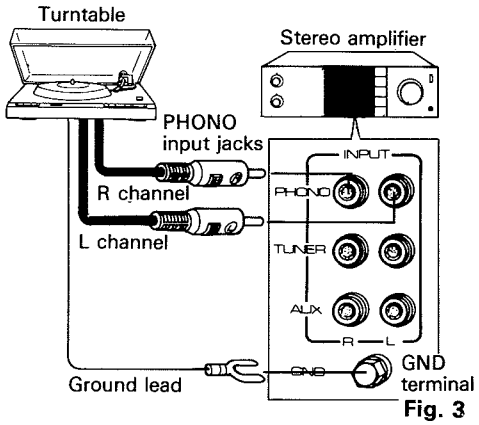


Fig. 3

CONNECTING THE TUNER (Fig. 4)

Connect the unit's TUNER jacks to the output jacks on the tuner using the pin plug cords. Connect the left and right channels properly.

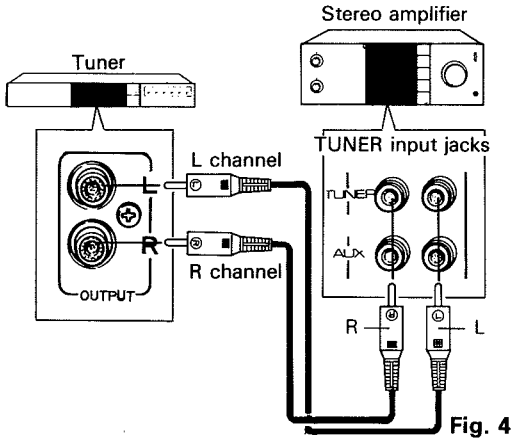


Fig. 4

CONNECTING THE AUX JACK (Fig. 5)

These jacks are used to hook up a TV tuner, cartridge tape player or tape deck. Connect the unit's AUX jacks to the output or PLAY jacks on the component using the pin plug cords.

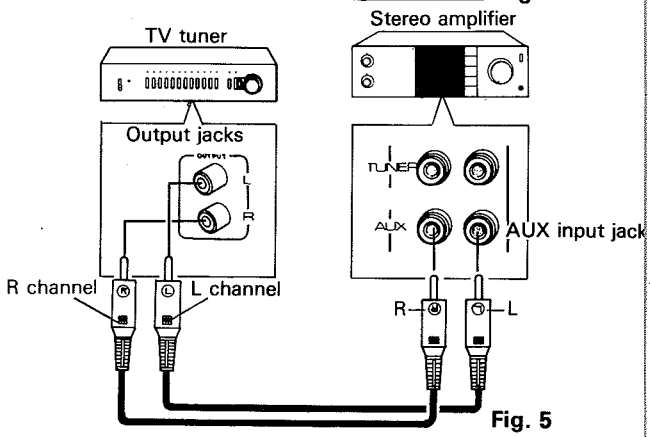


Fig. 5

CONNECTING THE TAPE DECK (Fig. 6)

There are two sets of input and output jacks for the tape deck, TAPE 1 and TAPE 2. Two decks can be connected for tape copying (dubbing) or for simultaneous recording.
Use the TAPE 1 jacks when connecting only one deck.

Connections for recording

Connect the unit's TAPE jacks labeled REC to the LINE INPUT (REC) jacks on the tape deck using the pin plug cords.

Connections for playback

Connect the unit's TAPE jacks labeled PLAY to the LINE OUTPUT (REC) jacks on the tape deck using the pin plug cords.

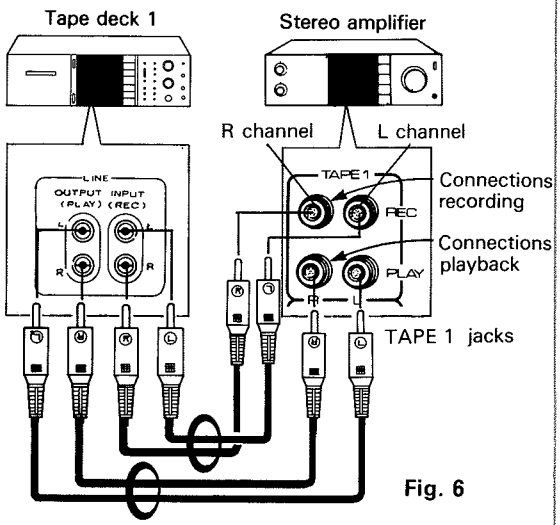
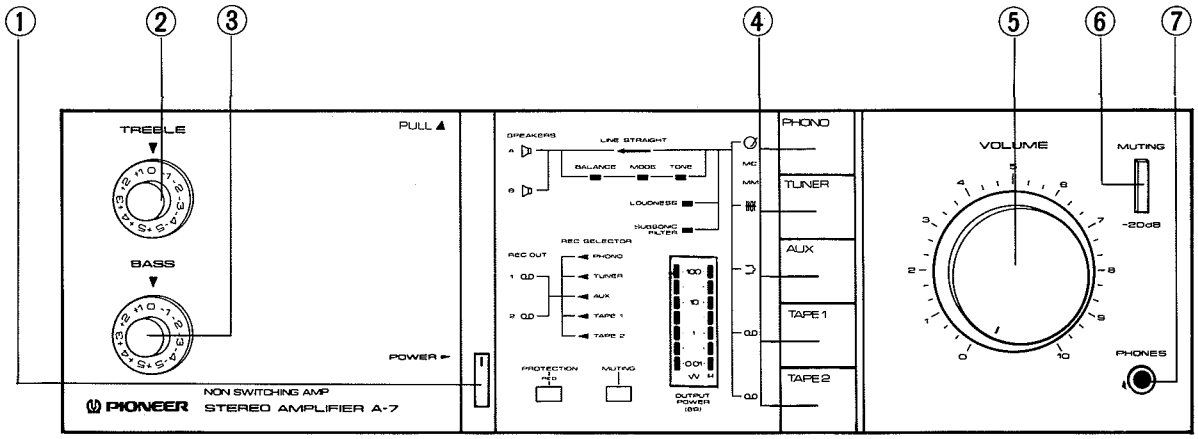


Fig. 6

FRONT PANEL FACILITIES



① POWER SWITCH

Power is supplied to the stereo amplifier as soon as this switch is depressed to the ON position.
The power is turned off when the switch is released to the OFF position. As soon as the power switch has been set to ON, the muting circuit is actuated, the PROTECTION-RED indicator lights up red/and after about 6 seconds when the muting circuit is released, the indicator goes from red to green.

② TREBLE CONTROL

This is used to adjust the treble (high-frequency range) sound. Rotate this control with the LINE STRAIGHT-OFF switch set to the depressed position. The treble is emphasized when the control is rotated clockwise from its center position and attenuated when it is rotated counterclockwise.

③ BASS CONTROL

This is used to adjust the bass (low-frequency range) sound. Rotate this control with the LINE STRAIGHT-OFF switch set to the depressed position. The bass is emphasized when the control is rotated clockwise from its center position and attenuated when it is rotated counterclockwise.

④ FUNCTION SWITCHES

These are used to select the sound source. At the left of each switch is a symbol function indicator which lights when the corresponding switch has been depressed. This indicates that the lighted function has been selected.

PHONO: Depress for playing records on a turntable connected to the PHONO jacks.

TUNER: Depress for listening to a program on a tuner connected to the TUNER jacks.

AUX: Depress for listening to the sound from a stereo component connected to the AUX jacks.

TAPE 1: Depress to listen to a tape in a tape deck connected to the TAPE 1 jacks or to monitor a recording.

TAPE 2: Depress to listen to a tape in a tape deck connected to the TAPE 2 jacks or to monitor a recording.

NOTE:
Depress only one FUNCTION switch at a time. The desired program source may not be selected if two or more switches are depressed at the same time.

⑤ VOLUME CONTROL

This is used to adjust the volume of sound heard through the speakers or headphones. No sound is heard when it is set to the "0" position. To increase the volume, rotate this control slowly clockwise (↷).

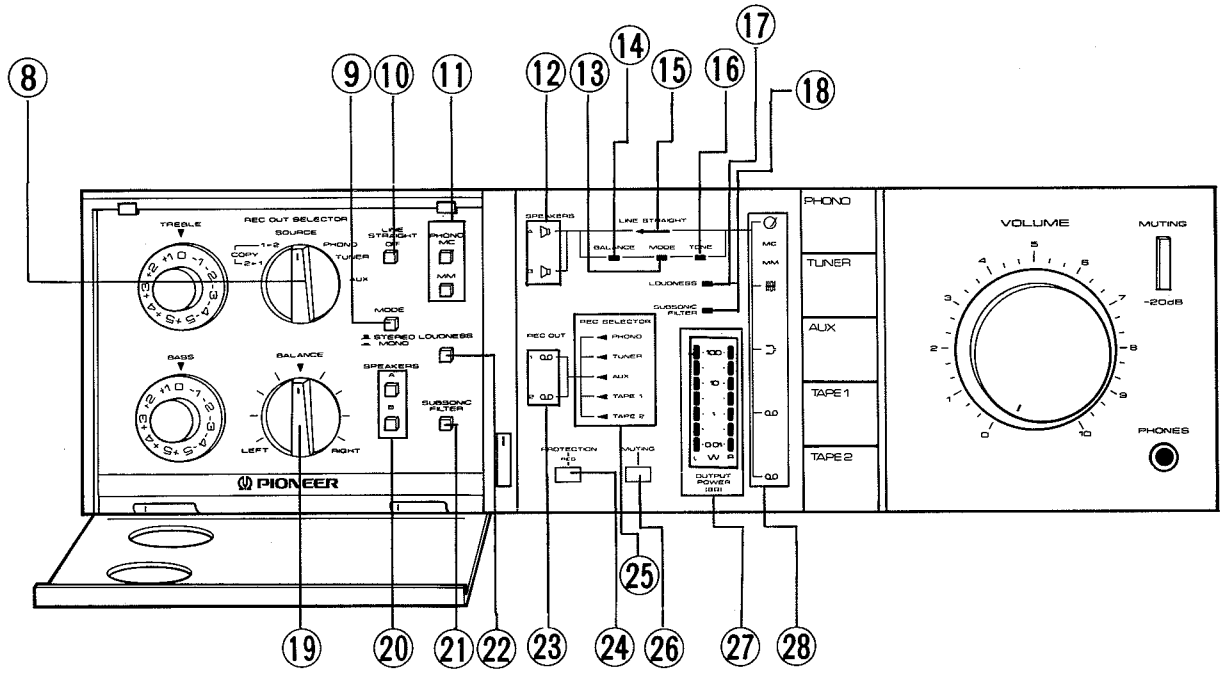
⑥ MUTING –20 dB SWITCH

The volume is attenuated by –20 dB when this switch is depressed to the ON position (MUTING indicator lights). The switch can be used effectively when the stylus descends onto the record during record play, when the sound is to be turned down temporarily and when you want to adjust the sound precisely as you listen to a program source under low sound level conditions.

⑦ PHONES JACK

Connect the plug on your headphones to this jack when listening to a program in private.

To listen to a program through the headphones, release both the SPEAKERS A and B switches.



⑧ REC OUT SELECTOR SWITCH

This is used to select the output signal which is fed out to the TAPE REC jacks.

COPY 2 ▶ 1: The output signal is fed out from the TAPE 2 PLAY jacks to the TAPE 1 REC jacks (when dubbing a tape from TAPE 2 to TAPE 1).

COPY 1 ▶ 2: The output signal is fed out from the TAPE 1 PLAY jacks to the TAPE 2 REC jacks (when dubbing a tape from TAPE 1 to TAPE 2).

SOURCE: The output signal of the program source (PHONO, TUNER, AUX, etc.) selected by the FUNCTION switch is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

PHONO: The output signal from the PHONO jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

TUNER: The output signal from the TUNER jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

AUX: The output signal from the AUX jacks is fed out to the TAPE 1 REC and TAPE 2 REC jacks.

⑨ MODE SELECTOR

This is used to select the mode.

■ STEREO: Set here for ordinary stereo listening.

▬ MONO: Set here to mix the left and right channel stereo input signals and hear them in mono through both the left and right speakers.

⑩ LINE STRAIGHT-OFF SWITCH

When this switch is released to the ON position (the LINE STRAIGHT indicator lights), the signal from the input jacks is directly sent to the power amplifier input without passing through the tone control circuit. When this switch is depressed to the OFF position, the input signal's tone quality can be adjusted with the tone controls.

⑪ PHONO MM/MC SELECTOR SWITCH

Set this switch to the position corresponding to the cartridge used when playing records on a turntable connected to the PHONO jacks.

MM: Set here when using an MM cartridge.

MC: Set here when using an MC cartridge.

⑫ SPEAKERS A/B INDICATORS

These light when one of the SPEAKERS switches has been depressed.

⑬ MODE INDICATOR

⑭ BALANCE INDICATOR

⑮ LINE STRAIGHT INDICATOR

This lights when the LINE STRAIGHT-OFF switch has been released to ON in place of the BALANCE, MODE and TONE indicators.

⑯ TONE INDICATOR

This lights when the tone control circuitry has been actuated.

⑰ LOUDNESS INDICATOR

This lights when the LOUDNESS siwtch has been set to ON.

⑱ SUBSONIC FILTER INDICATOR

This lights when the SUBSONIC FILTER switch has been set to ON.

⑲ BALANCE CONTROL

This is used to adjust the balance of the sound from the left and right channels. When rotated clockwise from its center position, the volume of the left (L) channel is reduced; when rotated counterclockwise, the volume of the right (R) channel is reduced.
To adjust the balance, first set the BALANCE control to its center position, set the MODE selector to MONO and rotate the control so that the sound seems to be coming from the midpoint between the left and right speakers.

⑳ SPEAKERS SWITCHES

These are used to select the speakers through which you will listen to the sound. When one of the switches is depressed, the corresponding speaker indicator will light to indicate that the selected speakers are now working.

A: The sound is heard from the speakers connected to the speaker A terminals.

B: The sound is heard from the speakers connected to the speaker B terminals.

No sound will be heard when SPEAKERS A and B switches are both released. This is the position at which the sound can be heard through the headphones.

㉑ SUBSONIC FILTER SWITCH

The subsonic filter with the 15 Hz cutoff frequency is actuated when this switch is depressed to the ON position (the SUBSONIC FILTER indicator lights).
This filter serves to attenuate frequencies lower than 15 Hz with a 6 dB/oct slope and, therefore, it can be used to suppress the ultra-low-range noise which is generated by record warp and other factors. This noise cannot actually be heard by the ear but it can cause cross modulation distortion and even speaker damage. Use this switch when required during record play.

㉒ LOUDNESS SWITCH

The bass and treble sound is emphasized when this switch is depressed to the ON position (LOUDNESS indicator lights) under low volume listening conditions.
When the volume of sound is low, the capability of the ear to pick up the bass and treble sound drops off, compared with high volume listening conditions. The LOUDNESS switch compensates for this characteristic of the ear. The bass and treble are emphasized when the switch is set to ON and the sound comes alive even when the volume is low.

㉓ REC OUT 1, 2 INDICATORS

These indicate the tape deck which is recording in accordance with the position selected by the REC OUT SELECTOR switch.

㉔ PROTECTION-RED INDICATOR

This lights in red or green, depending on the operating mode of the power protection circuit.

㉕ REC SELECTOR INDICATOR

This indicates the program source (PHONO, TUNER, AUX, etc.) being recorded in accordance with the position of the REC OUT SELECTOR switch.

㉖ MUTING INDICATOR

This lights in accordance with the position of the MUTING switch.

㉗ OUTPUT POWER 8 Ω METER

This indicates the output level when speakers with an 8-ohm impedance are connected to the speaker terminals. L is for the left channel and R for the right channel.

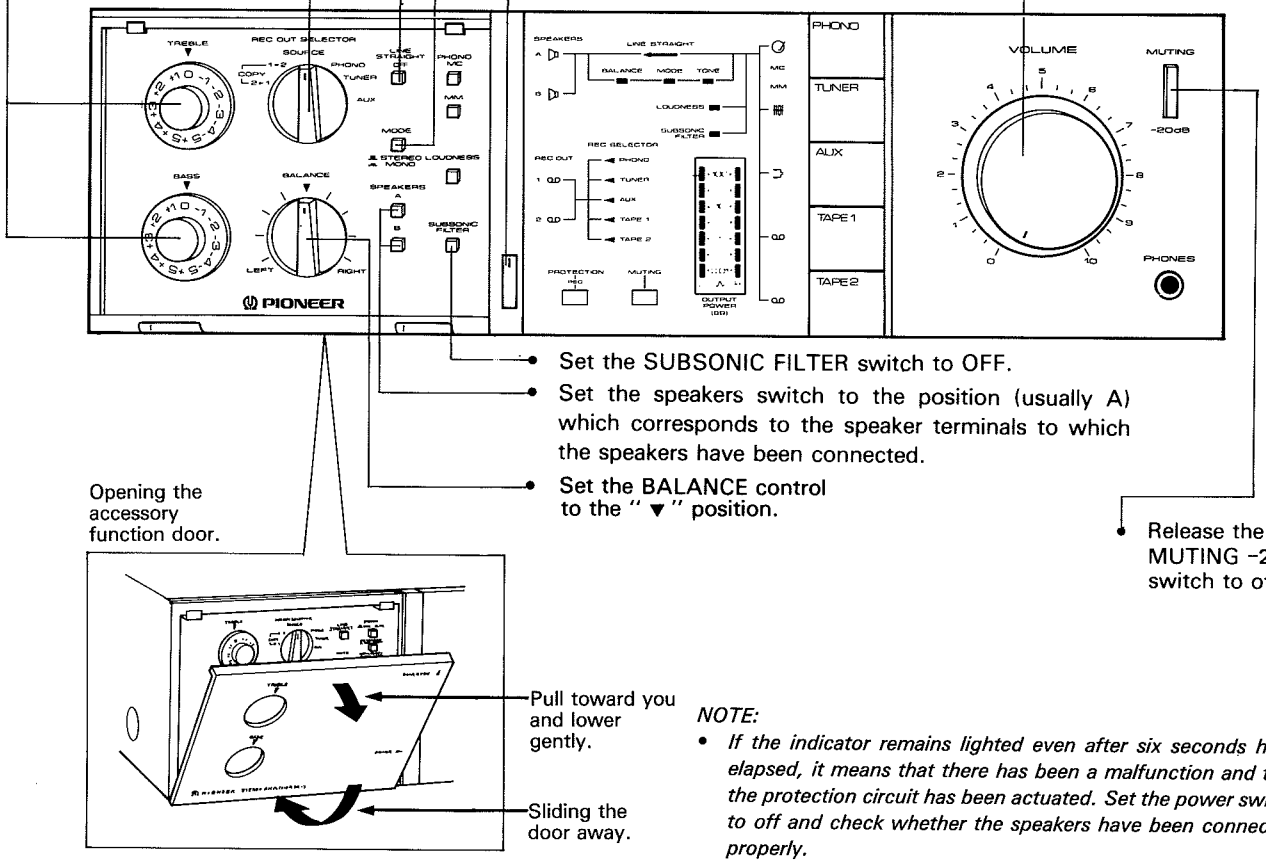
㉘ FUNCTION INDICATORS

The indicator corresponding to the selected FUNCTION switch lights.

OPERATIONS

BEFORE ALL OPERATION

Before switching on the power, set the stereo amplifier's controls and switches as follows:


Set the tone controls (bass and treble) to the center " ▼ " position.
Set the REC OUT SELECTOR switch to SOURCE.
Release the LINE STRAIGHT-OFF switch to the on position.
Set the MODE switch to STEREO.
POWER switch
Set the volume control to its leftmost (0) position.
Set the SUBSONIC FILTER switch to OFF.
Set the speakers switch to the position (usually A) which corresponds to the speaker terminals to which the speakers have been connected.
Set the BALANCE control to the " ▼ " position.
Release the MUTING -20dB switch to off.
Opening the accessory function door.
Pull toward you and lower gently.
Sliding the door away.

NOTE:

- *If the indicator remains lighted even after six seconds have elapsed, it means that there has been a malfunction and that the protection circuit has been actuated. Set the power switch to off and check whether the speakers have been connected properly.*

PLAYING RECORDS

The turntable which you have connected to the PHONO jacks allows play with either an MM (moving magnet) or MC (moving coil) cartridge thanks to the amplifier's facilities.

1. Depress the PHONO function switch.
2. Set th PHONO MM/MC selector switch to the position that corresponds to the cartridge being used.
3. Operate the turntable and start playing records.
4. Adjust the volume with the volume control.
5. Depress the LINE STRAIGHT switch to the OFF position and then adjust the tone controls (TONE indicator, etc. lights) to achieve the sound of your preference.
6. Set the SUBSONIC FILTER switch to ON if required.

LISTENING TO BROADCASTS

1. Depress the TUNER function switch.
2. Tune in the station on the tuner.
3. Adjust the volume with the volume control.
4. Depress the LINE STRAIGHT-OFF switch to the OFF position and then adjust the tone controls (TONE indicator, etc. lights) to achieve the sound of your preference.

LISTENING TO ANOTHER COMPONENT

1. Depress the AUX function switch in line with the AUX jacks to which the component has been connected.
2. Operate the component and start play.
3. Adjust the volume with the volume control.
4. Depress the LINE STRAIGHT-OFF switch to the OFF position and then adjust the tone controls (TONE indicator, etc. lights) to achieve the sound of your preference.

USING THE TAPE DECKS

PLAYING BACK TAPES (Fig. 7)

1. When playing back a tape on the tape deck which has been connected to the TAPE 1 jacks, depress the TAPE-1 function switch. When playing back a tape on the tape deck which has been connected to the TAPE 2 jacks, depress the TAPE-2 function switch.
2. Set the tape deck to the playback mode.
3. Adjust the volume with the volume control.
4. Depress the LINE STRAIGHT-OFF switch to the OFF position and then adjust the tone controls (TONE indicator, etc. lights) to achieve the sound of your preference.

RECORDING TAPES (Fig. 8)

1. Select the program source to be recorded using the function switch and check the operation of the component.
2. Set the REC OUT SELECTOR switch to the SOURCE position.
3. Start recording in line with the procedure for recording on a tape deck. Set the MODE switch to STEREO for recording.

To record a program source (such as an FM broadcast) while you are listening to another program source (such as a record).

Set the REC OUT SELECTOR to the desired position (PHONO, TUNER, AUX) corresponding to the program source which is to be recorded. Refer to page 12 for details. The signals selected by the REC OUT SELECTOR switch are fed out now to both the TAPE 1 REC and TAPE 2 REC jacks.

NOTES:

- *The volume, tone controls (BASS and TREBLE), balance control and loudness control have no effect at all on the signals from the TAPE REC jacks of the stereo amplifier.*
- *Refer to the section "Function switches and REC OUT SELECTOR switch" on page 12 for details on how to use the REC OUT SELECTOR switch.*

When monitoring the recording at the stereo headphone jack or speakers on a deck which has a monitoring mechanism (3-head type), depress the TAPE-1 or TAPE-2 function switch in line with the tape deck used for recording.

NOTE:

A recording cannot be monitored with a 2-head tape deck even if the function switches are operated. However, it is possible to listen to the reproduced sound (at the program source side).

COPYING (DUBBING) TAPES (Fig. 9)

If you have two tape decks, you can copy (or dub) a prerecorded tape's contents onto another tape.

1. Connect the two tape decks to the TAPE 1 and TAPE 2 jacks. (Refer to "Connecting the tape deck" on page 6.)
2. Set the REC OUT SELECTOR switch to COPY-1 ▶ 2 when copying from the tape deck connected to the TAPE 1 jacks to the tape deck connected to the TAPE 2 jacks.
   Set the REC OUT SELECTOR switch to COPY-2 ▶ 1 when copying from the tape deck connected to the TAPE 2 jacks to the tape deck connected to the TAPE 1 jacks.
3. In accordance with the actual direction of the tape copying, set one of the decks to the playback mode and the other to the recording mode.

The tape copying can be monitored by depressing the TAPE-2 or TAPE-1 function switch.

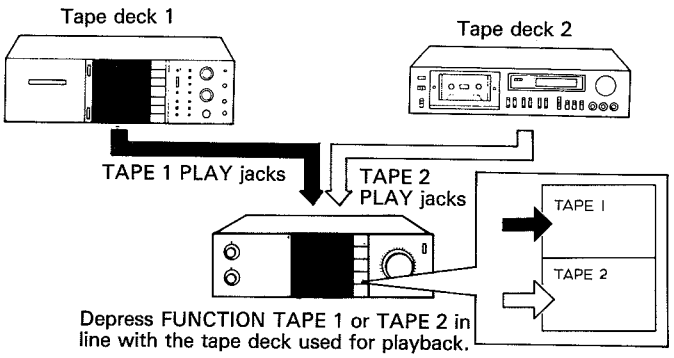

Tape deck 1
Tape deck 2
TAPE 1 PLAY jacks
TAPE 2 PLAY jacks
TAPE 1
TAPE 2
Depress FUNCTION TAPE 1 or TAPE 2 in line with the tape deck used for playback.

Fig. 7

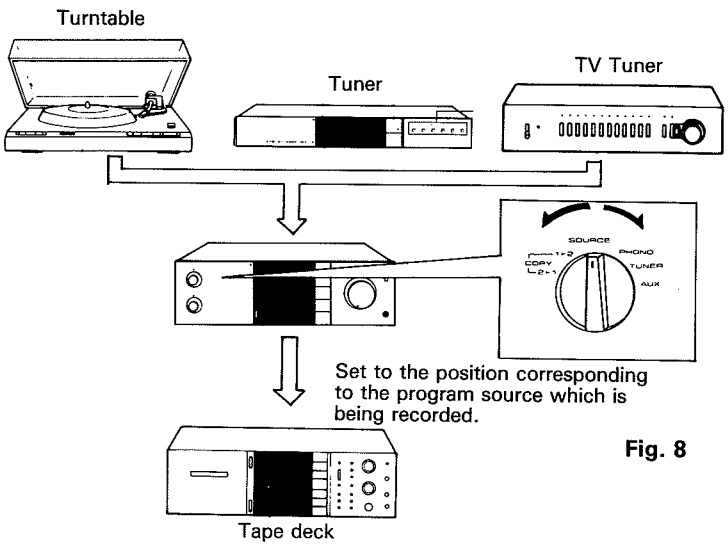


Fig. 8

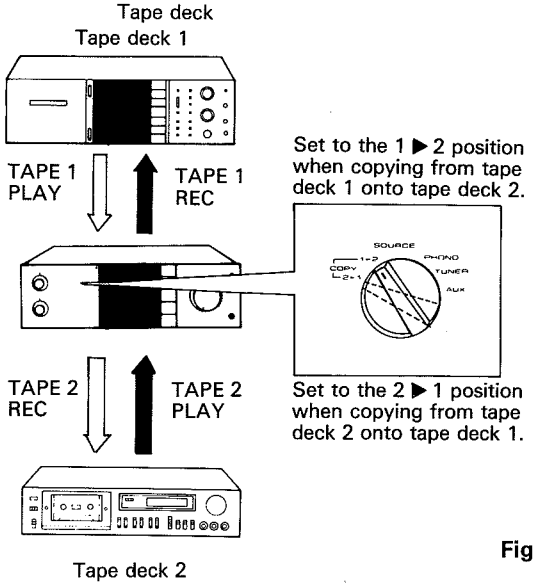
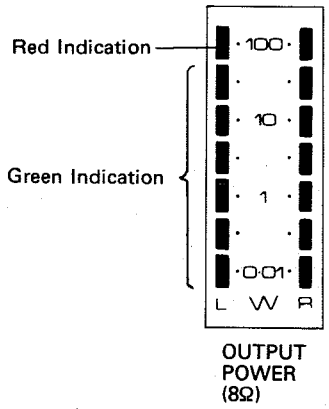

Tape deck 1
TAPE 1 PLAY
TAPE 1 REC
Set to the 1 ▶ 2 position when copying from tape deck 1 onto tape deck 2.
TAPE 2 REC
TAPE 2 PLAY
Set to the 2 ▶ 1 position when copying from tape deck 2 onto tape deck 1.
Tape deck 2

Fig. 9

EFFECTIVE USES

PEAK POWER INDICATOR

The peak power indicator shows the output level when speaker systems with a nominal impedance of 8 ohms have been connected to the speaker terminals of this unit. The upper scale graduations indicate the output level (peak) in watts. Since a logarithmic compressed graduation scale is used, it is possible to read out the output from small levels of 0.01 W to high levels of 100 W without selecting the power range.
During an actual performance, however, the impedance of the speaker systems fluctuates in accordance with the frequency and so the value indicated is not necessarily an accurate representation of the output but only a general guideline. To measure the accurate output level, connect an 8-ohm dummy load instead of the speakers to the speaker terminals.



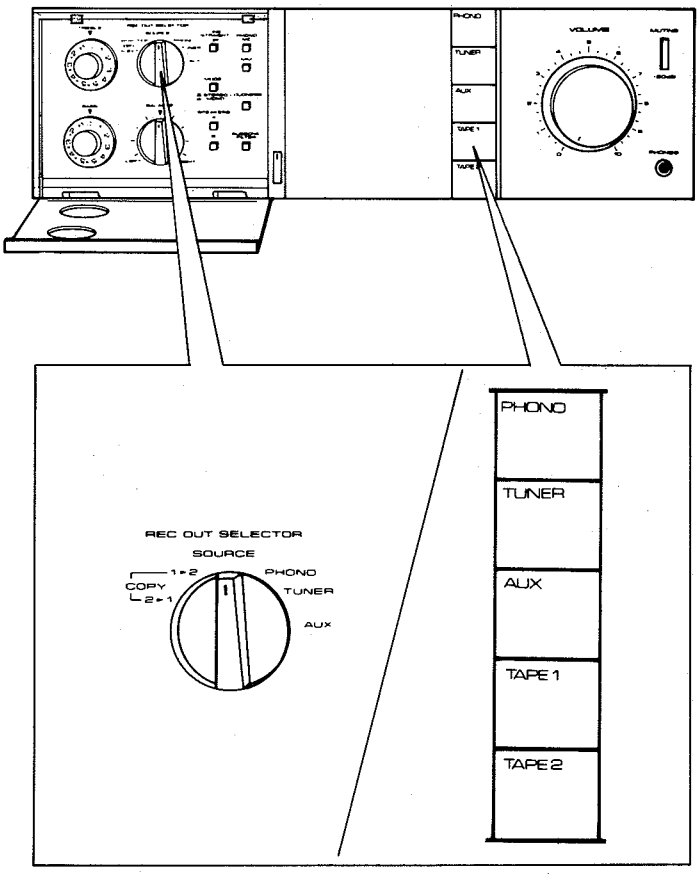
FUNCTION SWITCH AND REC OUT SELECTOR SWITCH

With this model you can channel the signals of a different program source from that selected by the FUNCTION switch, to the TAPE REC terminals. For instance, if you set the REC OUT SELECTOR switch to TUNER and the FUNCTION switch to PHONO, you can record a radio program on your tape deck and, at the same time, enjoy listening to records. The relationship of the TAPE 1 REC and TAPE 2 REC terminal output signals, as determined by the REC OUT SELECTOR switch and FUNCTION switch, is as follows:

REC OUT SELECTOR positions and TAPE REC terminal output

REC SELECTOR position	TAPE REC terminal output	
	REC 1	REC 2
COPY 2→1	TAPE 2 PLAY	—
COPY 1→2	—	TAPE 1 PLAY
SOURCE	*	*
PHONO	PHONO	PHONO
TUNER	TUNER	TUNER
AUX	AUX	AUX

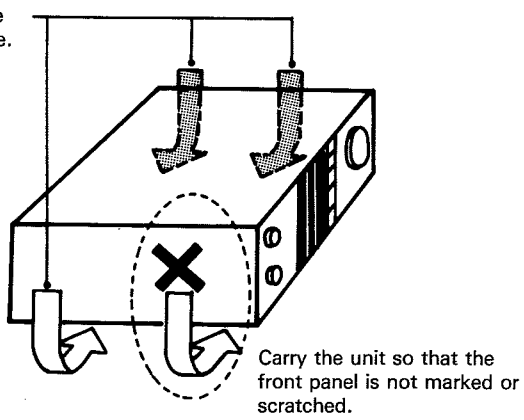
* When the REC OUT SELECTOR switch is set to the SOURCE position, the output signals of the program source (PHONO, TUNER, AUX) selected by the function switch are fed out.



PRECAUTIONS WHEN MOVING AND INSTALLING THE UNIT

This unit has a precision door mechanism built into the bottom panel. When moving it, bear in mind the following points:

- Do not hold the unit by the left side of the front panel.
- Ensure that the unit is installed on a flat surface.



TROUBLESHOOTING

Even if you suspect that something might be wrong with your amplifier, it is wise to proceed with simple checks. In many cases, improper operation is to blame. Also, the cause may lie outside the amplifier. Take the time to check the stereo components used and other electrical appliances being employed simultaneously. If the trouble is not remedied by following the checks below, turn off the power and contact an authorized Pioneer service station.

- **No sound**
  - Power switch is not at ON → Set to ON.
    (No sound is heard while PROTECTION indicator lights up red.)
  - SPEAKERS switch position does not correspond to actual speakers being used → Align to correct position.
  - Volume control is set to "0" → Rotate slowly clockwise.
  - Connecting cords have become detached from jacks → Insert pin plugs into terminals securely.
  - Speaker cords have become detached from terminals → Connect cords properly.
- **Sound heard in one channel only**
  - Balance control has been rotated fully to one side → Return control to center position.
  - One channel's input/output jacks have become disconnected → Insert the pin plugs and connecting cords into jacks properly.
- **Sound quality cannot be adjusted**
  - LINE STRAIGHT switch is at ON → Release switch to OFF position and rotate tone controls.
- **No stereo effect**
  - Mode switch has been set to MONO → Set it to STEREO.
  - Polarities of speakers and stereo amplifier are misaligned → Connect properly as instructed on page 5.

TROUBLE DURING RECORD PLAY

- **Howl heard**
  - Turntable is located too close to the speakers → Change position of turntable or speakers.
  - Installation locations of turntable or speaker are unstable → Place the turntable on a stable stand.
- **Humming noise heard**
  - Output cords or ground wire have not been connected properly → Connect the PHONO jacks and GND terminal properly.

TROUBLE WITH TAPE DECK USE

- **No recording possible**
  - REC OUT SELECTOR switch has not been set to the program source which is to be recorded → Set switch correctly.
- **No playback possible**
  - The TAPE 1 or TAPE 2 function switch has not been depressed → Set TAPE 1 or 2 switch to ON.

SPECIFICATIONS

Amplifier Section

Continuous Power Output is 70 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.007% total harmonic distortion.

Continuous Power Output at 1 kHz (both channels driven)
T.H.D. 0.007%, 8 ohms ..... 78 watts per channel
Total Harmonic Distortion (20 Hertz to 20,000 Hertz, 8 ohms, from TUNER)
continuous rated power output ..... No more than 0.007%
35 watts per channel power output .. No more than 0.005%
Intermodulation Distortion (50 Hertz:7,000 Hertz = 4:1, 8 ohms, from TUNER)
continuous rated power output ..... No more than 0.005%
35 watts per channel power output .. No more than 0.003%
Damping Factor (20 Hertz to 20,000 Hertz, 8 ohms) 60
Input Sensitivity/Impedance
PHONO MM ..... 2.5 mV/50 kilohms
PHONO MC ..... 0.25 mV/100 ohms
TUNER, AUX, TAPE PLAY 1, 2 ..... 150 mV/50 kilohms
Phono Overload Level (T.H.D. 0.0015%, 1,000 Hz)
PHONO MM ..... 200 mV
PHONO MC ..... 20 mV
Output Level/Impedance
TAPE REC 1, 2 ..... 150 mV/50 kilohms
Speaker ..... A/OFF, B/OFF (6~16 Ω)
Frequency Response
PHONO MM (RIAA Equalization) ..... 20 Hz to 20,000 Hz±0.3 dB
TUNER, AUX, TAPE PLAY 1, 2 ..... 5 Hz to 100,000 Hz $^{+0}_{-3}$ dB
Tone Control
BASS ..... ±10 dB (100 Hz)
TREBLE ..... ±10 dB (10 kHz)
Filter
LOW (SUBSONIC) ..... 20 Hz (6 dB/oct.)
Loudness Contour (Volume control set at −40 dB) ..... +9 dB (100 Hz), +3 dB (10 kHz)
Hum and Noise (IHF, short circuited A network)
PHONO MM ..... 88 dB
PHONO MC ..... 70 dB
TUNER, AUX, TAPE PLAY 1, 2 ..... 110 dB
Hum and Noise (DIN, continuous rated power output/50 mW)
PHONO MM ..... 80 dB/66 dB
PHONO MC ..... 70 dB/65 dB
TUNER, AUX, TAPE PLAY 1, 2 ..... 95 dB/69 dB
Muting ..... −20 dB

Miscellaneous

Power Requirements
HE, HB model ..... 220/240 V (switchable), 50/60 Hz
S, S/G model ... 110/120/220/240 V (switchable), 50/60 Hz
Power Consumption
HE, HB models ..... 420 W (max.)
S, S/G models ..... 160 W (max.)
Dimensions ..... 420 (W) x 132 (H) x 423 (D) mm
16-9/16 (W) x 5-3/16 (H) x 16-11/16 (D) in
Weight (without package) ..... 12.2 kg (26 lb 14 oz)

Furnished Parts

Operating Instructions ..... 1 (HE model only; 2)

**Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.*

NOTE:
Specifications and the design subject to possible modifications without notice due to improvements.

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